

MRU VARIO PLUS "INDUSTRIAL"

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PRICE LIST NO. 1-2009/EX

Price Basis: 01.01.2009 – 30.06.2009

SEMI-CONTINUOUS EMISSION MONITORING SYSTEM MRU VARIO PLUS "INDUSTRIAL"

Certified according to DIN EN 50379-1 and 50379-2
Complying with USEPA methods CTM-030 and CTM-034



Suitable for semi-continuous emission and control measurements at all industrial combustions sources (e.g.) power utilities, refineries, chemical plants, laboratories, heating/drying stations etc., as well as for compliance testing at engines, turbines, boilers and furnaces.

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Basic equipment

- Modern, rugged metal enclosure designed for roughest applications
 - Effective integrated flue gas conditioner with gas cooler, condensate pump auto-zero solenoid valve and inside sample gas flow volume
 - Optimized filter elements for protection against dust and soiling
 - High-speed printer with easy paper loading
- ➔ Simultaneous measurement of up to 9 gas components
(6 gas by means of electrochemical cells and 3 gas by means of NDIR bench)!

Fuel types: ALL KNOWN FUEL TYPES, USER SELECTABLE

Analysis of:

- | | | |
|-------------------------------------|---|--|
| • O ₂ (long-life sensor) | 0 – 21,0 % | (4-5 years expected life time) |
| • CO (H ₂ compensated) | 0 – 4.000 ppm nominal range
(max. overload range 0 – 10.000 ppm) | |
| • combustion air temperature | up to 100 °C | |
| • stack gas temperature | up to 650 °C | (optional up to 1700 °C) (with appropriate probes) |
| • differential pressure measurement | +/- 100 hPa | |

Combustion and emission calculations:

- CO referenced to 0 % O₂
- CO₂
- excess air
- efficiency
- dew point
- losses
- mg/m³
- NO_(x) as NO₂ (mg/m³) (optional)
- CO/CO₂ – ratio
- user definable O₂ referencing for toxic gases emission reports

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Features, configuration of basic equipment:

- Automatic internal test and control of soft- and hardware functions
- Large, high-contrast and lighted graphical display with zoom function and all measured data at one sight
- Large fuel type list including self choose fuels with user definable parameters
- Individual, user definable display and printout settings
- Variable O₂ referencing for emission reports
- RS 232 interface and data memory for approx. 8500 measurements
- Automatic interval measurement program
- Data-visualization and evaluation software for WINDOWS XP (Online View)
- Integrated, electrical gas cooler (Peltier cooler) and automatic condensate pump (peristaltic pump)
- Integrated high-speed thermo printer with easy paper loading
- Including differential pressure measurement
required for stack gas flow velocity measurement and stack pressure measurement)
- Including universal analog input (AUX socket) or 0-10 V or 4-20 mA signal or K-Thermocouple
- Automatic zeroing by means of 3-way solenoid valve, internal sample flow volume measurement
- CO Sensor purge by means of 3-way-valve and 2nd pump for sensor protection and fast CO activity,
with individual adjustable threshold values
- Universal power supply: mains 90-264 VAC/ 100 W, alternatively external 12 VDC power supply
- 2 hour battery operation, including power supply for gas cooler and heated glass wool filter of probe handle
(heated sample line operation is only possible with AC grid power supply)

Accessories of basic equipment:

- Combustion air temperature sensing element, short "K" type thermocouple
- 100 g glass wool filter (only for industrial gas sampling probe), lasting for 50 times filtering (2g / filter)
- 3 m RS 232 interface cable, data visualisation software on CD ROM
- Grid power supply cable and 12Vdc external power supply connector
- Adjustable shoulder strap

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**Portable Gas Analyser, including gas cooler, condensate pump,
gas sampling pump, gas filter and integral rechargeable batteries
and protective nylon transport case**

– Without gas sample probe – (select gas sample probes from page 6)

We recommend the use of industrial gas sampling probe with heated filter of probe handle!

Complete, as described above

Art.-No. 944008

EURO

4.796,00

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OPTIONS MRU VARIO PLUS "INDUSTRIAL"

			<u>Art.-No.</u>	<u>Price per Piece</u>
• NO	electrochemical measurement nominal range 0 – 1.000 ppm (max. overload range up to 5.000 ppm)	59699	EURO	473,00
• NO ₂	electrochemical measurement nominal range 0 – 200 ppm (max. overload range up to 1.000 ppm)	59731	EURO	613,00
• SO ₂	electrochemical measurement nominal range 0 – 2.000 ppm (max. overload range up to 5.000 ppm)	59732	EURO	613,00
• H ₂ S	electrochemical measurement nominal range 0 – 50 ppm (max. overload range up to 500 ppm)	59730	EURO	734,00
<u>or</u>				
• H ₂	electrochemical measurement nominal range 0 – 1,00 % (max. overload range up to 2,00%)	60270	EURO	734,00
<u>or</u>				
• CO	electrochemical measurement nominal range 0 – 4,00 % (max. overload range up to 10,00%)	59939	EURO	551,00

3-gas infrared bench:

• CO	measurement range 0 – 3% (min range) up to 10%	58118	EURO	1.355,00
• CO ₂	measurement range 0 – 3% (min range) up to 30%			
• CxHy as CH ₄	measurement range 0 – 1% (min range) up to 3% (calibrated with CH ₄ = methane)			
<u>or</u>				
• CO	measurement range 0 – 3% (min range) up to 10%	58986	EURO	1.255,00
• CO ₂	measurement range 0 – 3% (min range) up to 30%			
• CxHy as C ₃ H ₈	measurement range 0 – 5.000ppm (calibrated with C ₃ H ₈ = propane)			
<u>or</u>				
• CO	measurement range 0 – 30.000ppm	61447	EURO	2.085,00
• CO ₂	measurement range 0 – 3% up to 30%			
• CxHy as CH ₄	measurement range 0 – 10.000ppm (min range) (calibrated with CH ₄ = methane)			

(other measuring ranges for infrared bench are possible on request)

(only one NDIR bench from above can be installed)!!!

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FURTHER OPTIONS / ACCESSORIES

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	<u>Art.-No.</u>	<u>Price per Piece</u>
• Stack gas flow velocity measurement including mass flow calculation (Plus additionally a PITOT tube is needed... select one or more PITOT tubes from below)!!!	60644	EURO 133,00
PITOT TUBE Ø 6 mm, length 300 mm	85120	EURO 86,00
PITOT TUBE Ø 6 mm, length 500 mm	85130	EURO 95,00
PITOT TUBE Ø 6 mm, length 800 mm	85132	EURO 108,00
PITOT TUBE Ø 8 mm, length 1000 mm	85133	EURO 168,00
(Further lengths on request).		
• Interface for MMC (SD) card with Multi Media Card 1 GB (incl. data logging software)	59744	EURO 173,00
• RS 232 / RS 485 converter for long distance data transfer 2 x *** (*** 2 pcs. are required for data transfer, 1x for analyzer and 1x for PC!!!)	59795	EURO 258,00
• RS 232 to USB converter for data transfer to notebook (function of device depends on model of PC / notebook)	60157	EURO 49,30
• 8 channel analog outputs, 4 – 20 mA	59739	EURO 167,00
• Analyzer heating device (antifreeze device)	59788	EURO 163,00
• External NiMH battery (12V, 9Ah) for additional 4h mains free operation (incl. fast battery charger)	61683	EURO 571,00
• External 12Vdc power supply cable, 5 m (for 12Vdc socket)	61835	EURO 46,30
• Robust aluminium frame transport case with trolley and wheels	59745	EURO 418,00
• Stack draft probe, length 250 mm, with 3 m silicone hose (required only at use of industrial gas sample probe with heated filter)	59798	EURO 88,50
• Combustion air temperature probe, tube length 300 mm	60073	EURO 109,00
• Handheld remote control incl. 10 m transmission cable	821000	EURO 356,00
• Hand soot pump, with soot scale (Bacharach) and soot filter paper	51833	EURO 107,00

Further Accessories / Consumption Parts

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	<u>Art.-No.</u>	<u>Price per Piece</u>
• Service + cleaning set (spare filter, silicone fat, cleaning oil, etc.)	60181	EURO 73,00
• PTFE Spare fine filter element	56879	EURO 41,10
• Glass wool filter element (1 pack. = 1 kg, lasting for 500x filtering)	61041	EURO 269,00
• Sintered metal filter for standard gas sampling probe (probe tip)	56748	EURO 216,00
• Printer paper rolls, length 20 m, width 57 mm (1 package = 5 rolls)	59465	EURO 10,30
• Transparent cover for printer protocol	51867	EURO 0,30
• Soot filter paper (1 package = 200 pieces) (for hand soot pump #51833)	11700	EURO 5,10
• Soot scale (for hand soot pump #51833)	11701	EURO 7,20

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PROBES

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1. Industrial gas sampling probe

Art.-No. Price per Piece

With heated, easy replaceable glass wool filter with exchangeable probe tube and gas temperature measurement by means of **K-type** thermocouple (select one handle and one or more probe tubes from below)

• Gas sample probe handle with 2700 mm unheated sample line	60043 ***	EURO	928,00
• Gas sample probe handle with 5000 mm unheated sample line	60044	EURO	994,00
• Gas sample probe handle with 3000 mm heated sample line, +120°C temperature regulated	59785 ***	EURO	1.576,00
• Gas sample probe handle with 5000 mm heated sample line, +120°C temperature regulated	60119	EURO	1.687,00
➤ Probe tube 300 x 12 mm (up to 650°C)	11620 ***	EURO	185,00
➤ Probe tube 750 x 12 mm (up to 650°C)	11621 ***	EURO	347,00
➤ Probe tube 1000 x 12 mm (up to 650°C)	11622 ***	EURO	356,00
➤ Probe tube 1000 x 12 mm (INCONEL, up to 1100°C)	59552 ***	EURO	837,00
➤ Probe tube 1500 x 12 mm (up to 650°C)	11623	EURO	387,00
➤ Probe tube 1500 x 12 mm (INCONEL, up to 1100°C)	59904	EURO	1.538,00
➤ Probe tube 2000 x 12 mm (max. length)	11624	EURO	442,00
➤ Probe tube 2000 x 12 mm (INCONEL, up to 1100°C)	59622	EURO	1.681,00

2. High temperature (up to 1700°C) gas sampling probe

Art.-No. Price per Piece

With heated, easy replaceable glass wool filter

With exchangeable probe tube and gas temperature measurement by means of **S-type** thermocouple

• Gas sample probe handle with 2700 mm unheated sample line	60048	EURO	876,00
• Gas sample probe handle with 3000 mm heated sample line	61076	EURO	1.666,00
• Gas sample probe handle with 5000 mm heated sample line	61077	EURO	1.792,00
➤ Ceramic probe tube 1000 x 10 mm with "S"-type thermocouple	50869	EURO	989,00

3. Low cost gas sampling probe

Art.-No. Price per Piece

With exchangeable probe tube, continuous stack draft measurement, gas temperature measurement

Without filter elements, to be used only for clean combustions (like natural gas or light oil)

(select one handle and one or more probe tubes from below)

• Gas sample probe handle with 2700 mm unheated sample line	61709	EURO	265,00
• Gas sample probe handle with 5000 mm unheated sample line	61710	EURO	288,00
➤ Probe tube 300 x 10 mm (up to 650°C)	55671 ***	EURO	113,00
➤ Probe tube 750 x 10 mm (up to 650°C)	55672 ***	EURO	190,00
➤ Probe tube 750 x 10 mm (up to 500°C) with sintered metal filter 56748	60813	EURO	398,00
➤ Probe tube 1000 x 10 mm (up to 650°C)	55673	EURO	197,00
➤ Probe tube 1000 x 10 mm (up to 500°C) with sintered metal filter 56748	60814	EURO	451,00
➤ Probe tube 1000 x 10 mm (INCONEL, up to 1100°C)	56737 ***	EURO	510,00
➤ Probe tube 1500 x 10 mm (up to 650°C)	55674	EURO	364,00
➤ Probe tube 1500 x 10 mm (INCONEL, up to 1100°C)	56738	EURO	995,00
➤ Probe tube 1500 x 10 mm (up to 500°C) with sintered metal filter 56748	60815	EURO	531,00
➤ Probe tube 2000 x 10 mm (max. length)	55464	EURO	393,00

*** = Standard probes, available ex stock. Delivery time of all other probes: approx. 4-6 weeks

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Terms of delivery and payment

Prices:	ex works Obereisesheim, without VAT (value added tax)
Delivery time:	approx. 4–6 weeks from receipt of advance payment resp. L/C (depends on ordered options/accessories)
Delivery:	ex works Obereisesheim
Packing:	not included
Transport insurance:	not included
Customs clearance:	not included
Payment:	100 % advance payment <u>or</u> 100 % by irrevocable and confirmed L/C * (**) (* L/C charges are not included in the aforementioned prices. Total L/C charges inside & outside Germany to be born by the opener). (**) Minimum net order volume: Euro 10.000,--
Guarantee:	12 months (from date of dispatch) (exception: spare- and consumption parts)
Validity:	01.01.2009 – 30.06.2009

The general terms of sales and delivery of MRU are considered to be the bases of any business, unless other terms have been agreed to in writing.

